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A	Issued for approval										JV	AA IK 15/01/2022									
تتفح REV.	سبب الإصدار ISSUED FOR										بواسطة PREPARED	راجعها CHECKED									
										وافق عليها APPROVED											
										التاريخ DATE											
 Project No										المملكة العربية السعودية KINGDOM OF SAUDI ARABIA المؤسسة العامة لتحلية المياه المالحة SALINE WATER CONVERSION CORPORATION (SWCC)											
										نظام نقل مياه الجبيل – الرياض Jubail – Riyadh Water Transmission System محطة خزانات الخرج AL-KHARJ Reservoir Station											
المهندس ENGINEER																					
المقاول CONTRACTOR										 RTCC شركة الراشد للتجارة والمقاولات AL-RASHID TRADING & CONTRACTING CO.											
										SPECIFICATION OF LEVEL GAUGE AND ITP											
										DOCUMENT No.											
										SHEET											
										REV.											
4 9 - Q B 2 0 - H - 3 1 6										34 1											
FINAL ENGINEERING																					

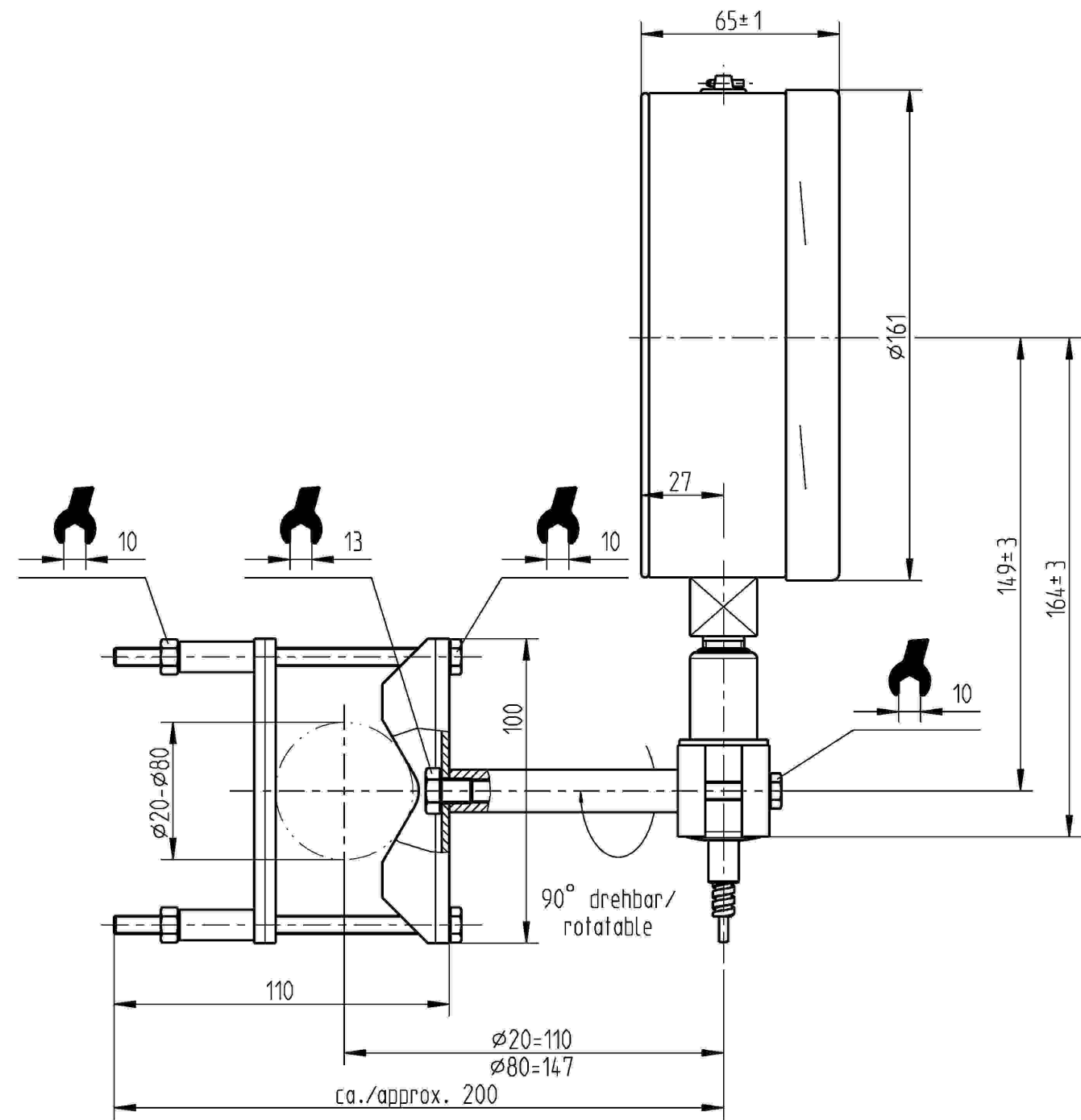
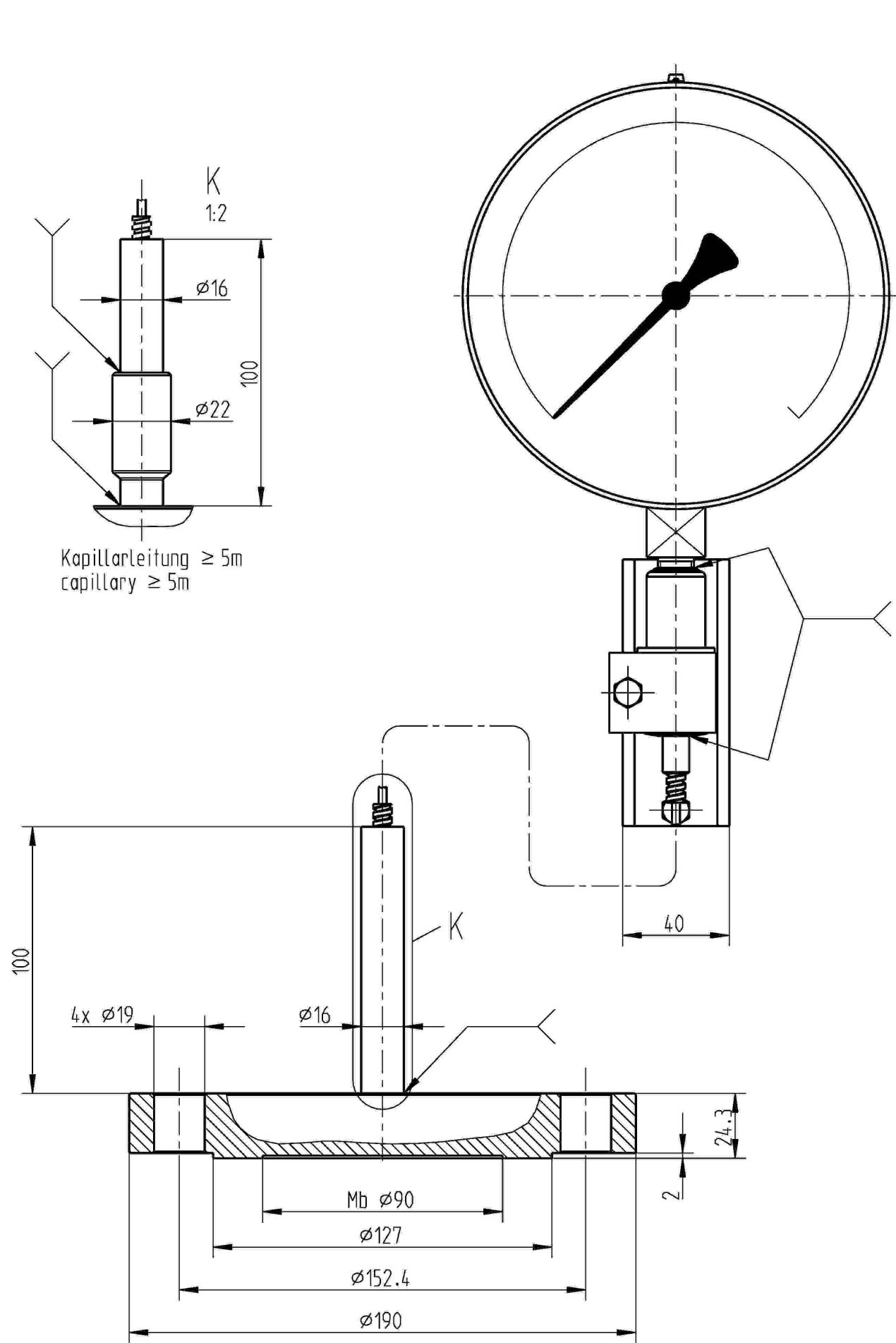
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	AL-KHARJ RESERVOIR STATION							
	Subject:							Spec. No. S01.S02&S03
Revision Index	SPECIFICATION OF LEVEL GAUGE AND ITP							
	First	Rev.	A	0	1			Document Number
	Issue	Date:	13/01/2022	31/03/2022	27/06/2022			49-QB20-H-316
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Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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	Issue	Date:	13/01/2022	31/03/2022	27/06/2022			49-QB20-H-316
1. Scope: The Material submittal covers manufacturing and factory testing, as well as for preparation and supply of documentation for Level Gauge used for Al Kharj Reservoir Stations Project for SWCC Water Transmission System. 2. References and Standards Project specifications: S01 Design and Construction of I&C Systems S01_QC10-H-121 S02 Field Instrumentation S02_QC10-H-122 S03 Installation and Start-up of Field Instrumentation. S03_QC10-H-123								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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Revision Index	First	Rev.	A	0	1			Document Number 49-QB20-H-316
	Issue	Date:	13/01/2022	31/03/2022	27/06/2022			
3. Technical Datasheet Bourdon Tube Pressure Gauges, Safety Pattern Series EN 837-1 Model: 233.30.160 Material pressure element: Measuring System 316L Case filling: with Nominal size: 160 mm Measuring range: gauge pressure range Scale range: 0...2 barg 2nd Scale or Special Scale: 2nd scale 0..2000 cmH2O Process connection: Diaphragm Seal Connector location: lower mount Window: laminated safety glass Restrictor: stainless steel, D 0.6 Pointer: adjustable pointer Accuracy class: class 1.0 Overpressure safe: 1.6 x full scale value + vacuum down to -1 bar Case filling fluid: glycerine Ingress protection: IP 67 Pressure Gauge Standard: International (standard Europe) color for 2.scale (inside): red RAL 3020 Manufacturer logo: *WIKA* with Serial number Diaphragm seal system with 1 diaphragm seal Assembly specification High-Side: 5 meter capillary; stainless steel Height difference high side: Diaphragm seal 1 m above pressure instrument System fill fluid: KN 2 Silicone oil for general applications Process temperature min.: + 10°C / max.: + 100°C Ambient temperature pressure meas. min: 0°C / max: + 60°C Capillary inner diameter: ID 1mm (3x1.0 mm) Additional ordering information: mounting bracket material : SS316; Mounting bracket: Pipe mounting bracket, pipe ø 20 - 80 mm, in galvanized steel Diaphragm seal, flange type, flush diaphragm Diaphragm seal: Model 990.27 Process connection standard: following ASME B16.5 Process connection: 3" Nominal pressure rating: Class 150								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

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	Issue	Date:	13/01/2022	31/03/2022	27/06/2022			
Sealing face: RF 125...250 AA Upper body material / main body material: Stainless steel 1.4404 (316L); UNS S31603 Diaphragm material: Stainless steel 1.4435 (316L); UNS S31603 Sealing face material: Stainless steel 1.4404 (316L); UNS S31603 Test-Report Certifications: • Calibration Test Report – 3 Points • Material certificate: Wetted parts material (metal contents) with mill certificate incl. chemical analysis • Pressure and stability test: 1.5 x full scale range for ASME, API, JIS-flanges; duration 3 minutes, 1 cycle Tag #: T1AKB49CL501								
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

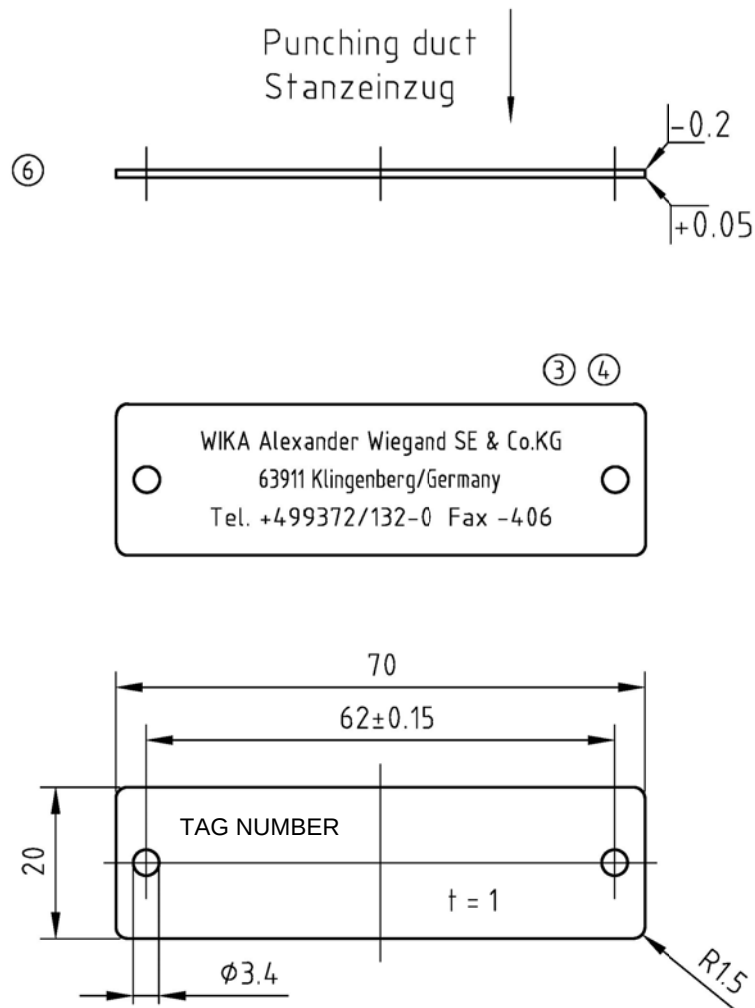
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	4. GAD DRAWING							
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					



Tag #: T1AKB49CL501

MASS-ZCHG 23X.30.160 UFA RO-GRTHLT KAPLTG 990.27 DN3" CL.150 ASME MB90						Item no. / Artikel-Nr.	
PRESSURE GAUGE WITH DIAPHRAGM SEAL						14182505.01	
MANOMETER MIT DRUCKMITTLER							
Material			Scale	modified Bearbeitung	01.07.16	PAULINT	Reference
			1:2	released Freigabe	01.07.16	FUCHSC	UV/DA 44
Blank Rohteil		Nom.Size NG	160				Sheet / Blatt 1 / 1
							Comment Bemerkung
			Check dimension Prüfmaß	ISO 13715	Toler. ISO 8015	Unit Einheit	ALEXANDER WIEGAND SE & Co. KG
						[mm]	 D-63908 Klingenberg www.wika.com

Tag Plate Drawing



WKA Alexander Wiegand SE & Co.KG
63911 Klingenberg/Germany
Tel. +499372/132-0 Fax -406

Vorderseite: beschriftet
Rueckseite: blank
Schrifthoehe: 2,5mm

Oel- und fettfrei
Oberflaeche frei von
Riefen und Kratzern
Free of oil and grease
Surface free of grooves
and scratches

Workflow
Freigabe-22-intern

REVISION

51921	06	SHI 70x20x1 WKA-ADRESSE 1.4571						Item no. / Artikel-Nr.	
29013	05	LABEL Schild						2047960.06	
11873	04							Reference	
9222	03	Material	X6CrNiMoTi17-12-2+2B 1.4571+2B DIN EN 10088-3 ⑥ ⑤ ②	Scale	1:1	modified Bearbeitung released Freigabe	17.03.16	REINHAH	UV/DA 22
9074	02						18.03.16	SCHAADC	Sheet / Blatt 1 / 1
11.08.97	01	Blank Rohteil	Nom.Size NG						Coment Bemerkung
created/erstellt 11.08.1997 SCHM © by WKA		Tol. DIN 6930 - m (Thickness/Dicke ... 1) deformed/umgeformt Stamped parts/Stanzteile plane/eben			Check dimension Pruefmaß	ISO 13715	Toler. ISO 8015	Unit Einheit [mm]	ALEXANDER WIEGAND SE & Co. KG D-63908 Klingenberg www.wika.com
		...6 ...10 ...25 ...63 ...160 ...R6 ...6 ...10 ...25 ...63 ...160 ...R6 ...R10 ±0.2 ±0.3 ±0.4 ±0.5 ±0.6 ±0.4 ±0.1 ±0.15 ±0.2 ±0.25 ±0.3 ±0.2 ±0.3							

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5. CATALOGUE								
Final Engineering		Contractor					Subcontractor	
		AL-RASHID TRADING & CONTRACTING CO.						

Bourdon tube pressure gauge

For the process industry, safety version

Models 232.30 and 233.30

WIKA data sheet PM 02.04



for further approvals,
see page 6

Applications

- Increased safety requirements for personal protection
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Oil and gas industry, chemical and petrochemical industries, power engineering and also water and wastewater technology

Special features

- Safety level "S3" with solid baffle wall designed in compliance with the requirements and test conditions of EN 837-1
- Excellent load-cycle stability and shock resistance
- With case filling (model 233.30) for applications with high dynamic pressure loads and vibrations
- EMICOGauge version, to avoid fugitive emissions
- Scale ranges from 0 ... 0.6 to 0 ... 1,600 bar [0 ... 10 to 0 ... 20,000 psi]



Bourdon tube pressure gauge, model 232.30, NS 100 [4"]

Description

This high-quality Bourdon tube pressure gauge has been designed especially for increased safety requirements within the process industry.

The use of high-quality stainless steel materials and the robust design are geared to applications in the chemical and process engineering industries. Thus the instrument is suitable for liquid and gaseous media, also in aggressive environments.

Scale ranges of 0 ... 0.6 to 0 ... 1,600 bar [0 ... 10 to 0 ... 20,000 psi] ensure the measuring ranges required for a wide variety of applications.

WIKA manufactures and qualifies the pressure gauge with safety level "S3" in accordance with the requirements of the EN 837-1 European standard. This safety level is made up of a non-splintering window, a solid baffle wall between measuring system and dial and a blow-out back. In the event of a failure, the operator is protected at the front side, as media or components can only be ejected via the back of the case.

For harsh operating conditions (e.g. vibrations), all instruments are also available with an optional liquid filling.

Specifications

Basic information	
Standard	■ EN 837-1 ■ ASME B40.100 For information on the "Selection, installation, handling and operation of pressure gauges", see Technical information IN 00.05.
Further version	■ For oxygen, oil- and grease-free ■ Per NACE ¹⁾ MR0175 / ISO 15156, use in H₂S-containing environments in oil and gas production ■ Per NACE ¹⁾ MR0103 / ISO 17945, metals resistant to sulphide stress cracking ■ With pre-volume deflagration flame arrester ²⁾ for connection to zone 0 (EPL Ga); model 910.21; see data sheet AC 91.02 ■ Monel version; models 262 and 263; see data sheet PM 02.33 ■ EMICOGauge, to avoid fugitive emissions; instrument hook-up with instrumentation valves. → See page 10
Nominal size (NS)	■ Ø 63 mm [2 ½"] ■ Ø 100 mm [4"] ■ Ø 160 mm [6"]
Connection location	■ Lower mount (radial) ■ Lower back mount ³⁾
Window	Laminated safety glass (NS 63 [2 ½"]: Polycarbonate)
Case	
Design	Safety level "S3" per EN 837-1 With solid baffle wall and blow-out back Scale ranges ≤ 0 ... 16 bar [≤ 0 ... 300 psi] with compensating valve to vent and reseal case
Material	■ Stainless steel 1.4301 (304) ■ Stainless steel 1.4571 (316 Ti)
Ring	Bayonet ring, stainless steel
Mounting	■ Without ■ Panel mounting flange, stainless steel ■ Panel mounting flange, polished stainless steel ■ Surface mounting lugs on the back, stainless steel
Case filling (model 233.30)	■ Without ■ Glycerine ■ Glycerine-water mixture for NS 100 [4"] and 160 [6"] with scale range ≤ 0 ... 2.5 bar [≤ 0 ... 40 psi] or for NS 63 [2 ½"] with scale range ≤ 0 ... 4 bar [≤ 0 ... 60 psi] ■ Silicone oil
Movement	■ Stainless steel ■ everlast® version

1) General information about NACE standards; see data sheet IN 00.21

2) Only for instruments with Ex approval

3) Not available for NS 160 [6"]

Measuring element	
Type of measuring element	Bourdon tube, C-type or helical type
Material	Stainless steel 1.4404 (316L)
Leak tightness	■ Helium tested, leakage rate: < 5 · 10⁻³ mbar l/s ■ Helium tested, leakage rate: < 1 · 10⁻⁶ mbar l/s

Accuracy specifications		
Accuracy class		
NS 63 [2 ½"]	EN 837-1	Class 1.6
	ASME B40.100	±2 % of measuring span (grade A)
NS 100 [4"], 160 [6"]	EN 837-1	Class 1.0
	ASME B40.100	±1 % of measuring span (grade 1A)
Temperature error	On deviation from the reference conditions at the measuring system: ≤ ±0.4 % per 10 °C [≤ ±0.4 % per 18 °F] of full scale value	
Reference conditions		
Ambient temperature	+20 °C [68 °F]	

Scale ranges

bar	
0 ... 0.6 ¹⁾	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 250
0 ... 6	0 ... 400
0 ... 10	0 ... 600
0 ... 16	0 ... 1,000
0 ... 25	0 ... 1,600 ¹⁾

kg/cm²	
0 ... 0.6 ¹⁾	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160
0 ... 4	0 ... 250
0 ... 6	0 ... 400
0 ... 10	0 ... 600
0 ... 16	0 ... 1,000
0 ... 25	0 ... 1,600 ¹⁾

kPa	
0 ... 60 ¹⁾	0 ... 4,000
0 ... 100	0 ... 6,000
0 ... 160	0 ... 10,000
0 ... 250	0 ... 16,000
0 ... 400	0 ... 25,000
0 ... 600	0 ... 40,000
0 ... 1,000	0 ... 60,000
0 ... 1,600	0 ... 100,000
0 ... 2,500	0 ... 160,000 ¹⁾

MPa	
0 ... 0.06 ¹⁾	0 ... 4
0 ... 0.1	0 ... 6
0 ... 0.16	0 ... 10
0 ... 0.25	0 ... 16
0 ... 0.4	0 ... 25
0 ... 0.6	0 ... 40
0 ... 1	0 ... 60
0 ... 1.6	0 ... 100
0 ... 2.5	0 ... 160 ¹⁾

psi	
0 ... 10 ¹⁾	0 ... 1,000
0 ... 15	0 ... 1,500
0 ... 30	0 ... 2,000
0 ... 60	0 ... 3,000
0 ... 100	0 ... 4,000
0 ... 160	0 ... 5,000
0 ... 200	0 ... 6,000
0 ... 300	0 ... 7,500
0 ... 400	0 ... 10,000
0 ... 600	0 ... 15,000
0 ... 800	0 ... 20,000 ¹⁾

1) Not available for NS 63 [2 ½"]

Vacuum and +/- scale ranges

bar	
-0.6 ... 0 ¹⁾	-1 ... +5
-1 ... 0	-1 ... +9
-1 ... +0.6	-1 ... +15
-1 ... +1.5	-1 ... +24
-1 ... +3	

kPa	
-60 ... 0 ¹⁾	-100 ... +500
-100 ... 0	-100 ... +900
-100 ... +60	-100 ... +1,500
-100 ... +150	-100 ... +2,400
-100 ... +300	

MPa	
-0.06 ... 0 ¹⁾	-0.1 ... +0.5
-0.1 ... 0	-0.1 ... +0.9
-0.1 ... +0.06	-0.1 ... +1.5
-0.1 ... +0.15	-0.1 ... +2.4
-0.1 ... +0.3	

psi	
-30 inHg ... 0	-30 inHg ... +100
-30 inHg ... +15	-30 inHg ... +160
-30 inHg ... +30	-30 inHg ... +200
-30 inHg ... +60	-30 inHg ... +300

1) Not available for NS 63 [2 ½"]

Further details on: Scale ranges

Unit	■ bar ■ psi ■ kg/cm² ■ kPa ■ MPa
Increased overload safety	■ Without ■ 2-fold ■ 3-fold ■ 4-fold ■ 5-fold The possibility of selection depends on scale range and nominal size
Vacuum resistance	■ Without ■ Vacuum-resistant to -1 bar
Dial	
Scale colour	Black
Material	Aluminium
Customer-specific version	■ Without ■ With temperature scale for refrigerant, e.g. for NH3: R 717 Other scales or customer-specific dials, e.g. with red mark, circular arcs or circular sectors, on request
Pointer	
Instrument pointer	Aluminium, black
Mark pointer/drag pointer	■ Without ■ Red mark pointer on dial, fixed ■ Red mark pointer on window, adjustable ■ Mark pointer on bayonet ring, adjustable ■ Red drag pointer on window, adjustable
Pointer stop pin	■ Without ■ At zero point (only for NS 63 [2 ½"]) ■ At 6 o'clock (only for NS 100 [4"], 160 [6"])

Other scale ranges on request

Process connection	
Standard	■ EN 837-1 ■ ISO 7 ■ ANSI/B1.20.1
Size	
EN 837-1	■ G 1/8 B, male thread ■ G 1/4 B, male thread ■ G 1/2 B, male thread ■ M12 x 1.5, male thread ■ M20 x 1.5, male thread
ISO 7	■ R 1/4, male thread ■ R 1/2, male thread
ANSI/B1.20.1	■ 1/4 NPT, male thread ■ 1/2 NPT, male thread
Restrictor	■ Without ■ Ø 0.6 mm [0.024"], stainless steel ■ Ø 0.3 mm [0.012"], stainless steel
Material (wetted)	
Process connection	■ NS 100 [4"], 160 [6"]: Stainless steel 1.4404 (316L) ■ NS 63 [2 1/2"]: Stainless steel 1.4571 (316 Ti)
Bourdon tube	■ Stainless steel 1.4404 (316L)

Other process connections on request

Operating conditions		
Medium temperature		
Unfilled instruments	-40 ... +200 °C [-40 ... +392 °F]	
Instruments with glycerine filling	-20 ... +100 °C [-4 ... +212 °F]	
Instruments with silicone oil filling	-40 ... +100 °C [-40 ... +212 °F]	
Ambient temperature		
Unfilled instruments or with silicone oil filling	-40 ... +60 °C [-40 ... +140 °F]	
Instruments with glycerine filling	-20 ... +60 °C [-4 ... +140 °F]	
Pressure limitation		
NS 63 [2 ½"]	Steady	3/4 x full scale value
	Fluctuating	2/3 x full scale value
	Short time	Full scale value
NS 100 [4"], 160 [6"]	Steady	Full scale value
	Fluctuating	0.9 x full scale value
	Short time	1.3 x full scale value
Ingress protection per IEC/EN 60529	■ IP65 ■ IP66 ■ IP54 (for lower back mount)	

Approvals

Logo	Description	Country
	EU declaration of conformity Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
-	CRN Safety (e.g. electr. safety, overpressure, ...) For scale ranges ≤ 1,000 bar	Canada

Optional approvals

Logo	Description	Country
 	EU declaration of conformity ATEX directive Hazardous areas - Ex h Gas II 2G Ex h IIC T6 ... T1 Gb X Dust II 2D Ex h IIC T85°C ... T450°C Db X	European Union
	EAC Hazardous areas	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
-	MTSCHS Permission for commissioning	Kazakhstan
	BelGIM Metrology, measurement technology	Belarus
-	UkrSEPRO Metrology, measurement technology	Ukraine
	Uzstandard Metrology, measurement technology	Uzbekistan
-	CPA Metrology, measurement technology	China
	DNV GL Ships, shipbuilding (e.g. offshore)	International

Manufacturer's information and certificates

Logo	Description
-	Emission protection in accordance with TA-Luft (VDI 2440) ¹⁾

1) only for EMICOGauge → See page 10

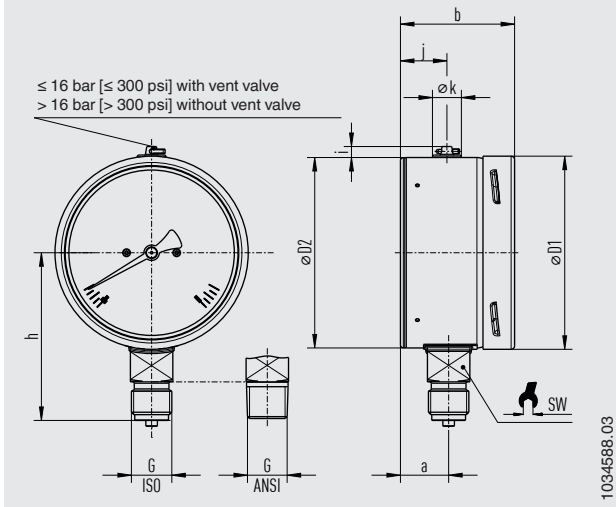
Certificates (option)

Certificates	
Certificates	■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy) ■ PCA calibration certificate, traceable and accredited in accordance with ISO/IEC 17025 ■ Calibration certificate by a national accreditation body, traceable and accredited in accordance with ISO/IEC 17025 on request
Recommended recalibration interval	1 year (dependent on conditions of use)

→ For approvals and certificates, see website

Dimensions in mm [in]

Lower mount (radial)



NS	Weight	
	Model 232.30	Model 233.30
63 [2 ½"]	approx. 0.20 kg [0.44 lb]	approx. 0.26 kg [0.57 lb]
100 [4"]	approx. 0.65 kg [1.43 lb]	approx. 1.08 kg [2.38 lb]
160 [6"]	approx. 1.30 kg [2.87 lb]	approx. 2.34 kg [4.94 lb]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]								
		h ±1 [0.04]	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	G ¼ B	54 [2.13]	17.5 [0.69]	42 [1.65]	63 [2.48]	62 [2.44]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
	G ⅝ B	51 [2.01]								
	M12 x 1.5	54 [2.13]								
100 [4"]	G ¼ B	87 [3.43]	25 [0.98]	59.5 [2.34]	100 [3.94]	100 [3.94]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	G ½ B	87 [3.43]								
	M12 x 1.5	80 [3.15]								
	M20 x 1.5	87 [3.43]								
160 [6"]	G ¼ B	111 [4.37]	27 [1.06] ¹⁾	65 [2.56] ²⁾	159 [6.26]	159 [6.26]	6 [0.24]	18.5 [0.73]	15 [0.59]	22 [0.87]
	G ½ B	118 [4.65]								
	M12 x 1.5	111 [4.37]								
	M20 x 1.5	118 [4.65]								

Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]								
		h ±1 [0.04]	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	R ¼	54 [2.13]	17.5 [0.69]	42 [1.65]	63 [2.48]	62 [2.44]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	80 [3.15]	25 [0.98]	59.5 [2.34]	100 [3.94]	100 [3.94]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	R ½	86 [3.39]								
160 [6"]	R ¼	111 [4.37]	27 [1.06] ¹⁾	65 [2.56] ²⁾	159 [6.26]	159 [6.26]	6 [0.24]	18.5 [0.73]	15 [0.59]	22 [0.87]
	R ½	117 [4.61]								

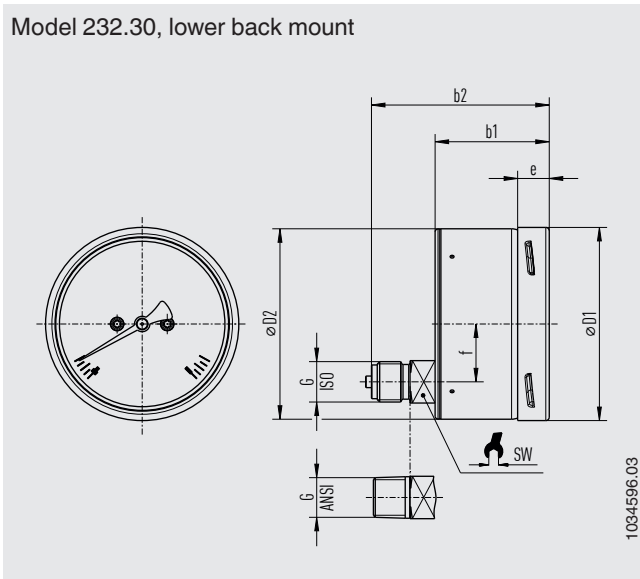
Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		h ±1 [0.04]	a	b	D1	D2	i	y	k	SW
63 [2 ½"]	¼ NPT	54 [2.13]	17.5 [0.69]	42 [1.65]	63 [2.48]	62 [2.44]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
	⅝ NPT	51 [2.01]								
100 [4"]	¼ NPT	80 [3.15]	25 [0.98]	59.5 [2.34]	100 [3.94]	100 [3.94]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	½ NPT	86 [3.39]								
160 [6"]	¼ NPT	111 [4.37]	27 [1.06] ¹⁾	65 [2.56] ²⁾	159 [6.26]	159 [6.26]	6 [0.24]	18.5 [0.73]	15 [0.59]	22 [0.87]
	½ NPT	117 [4.61]								

1) With scale range ≥ 0 ... 100 bar [1,500 psi] a = 41.5 [1.63]

2) With scale range ≥ 0 ... 100 bar [1,500 psi] b = 79 [3.11]

Model 232.30, lower back mount



NS	Weight
63 [2 ½"]	approx. 0.20 kg [0.44 lbs]
100 [4"]	approx. 0.65 kg [1.43 lbs]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]						
		b1	b2	D1	D2	e	f	SW
63 [2 ½"]	G ¼ B	42 [1.65]	61 [2.4]	63 [2.48]	62 [2.44]	14.5 [0.57]	18.5 [0.73]	14 [0.55]
	G ⅛ B							
	M12 x 1.5							
100 [4"]	G ¼ B	59.5 [2.34]	93 [3.66]	101 [3.98]	100 [3.94]	17 [0.67]	30 [1.18]	22 [0.87]
	G ½ B							
	M12 x 1.5							
	M20 x 1.5							

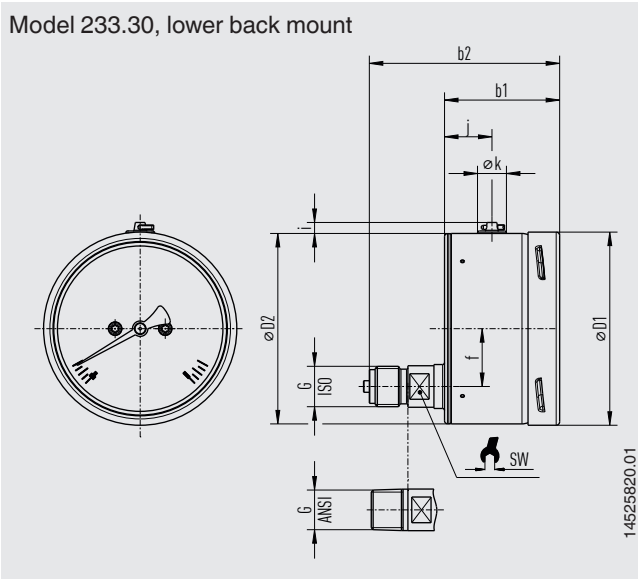
Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]						
		b1	b2	D1	D2	e	f	SW
63 [2 ½"]	R ¼	42 [1.65]	61 [2.4]	63 [2.48]	62 [2.44]	14.5 [0.57]	18.5 [0.73]	14 [0.55]
100 [4"]	R ¼	59.5 [2.34]	93 [3.66]	101 [3.98]	100 [3.94]	17 [0.67]	30 [1.18]	22 [0.87]
	R ½							

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]						
		b1	b2	D1	D2	e	f	SW
63 [2 ½"]	¼ NPT	42 [1.65]	61 [2.4]	63 [2.48]	62 [2.44]	14.5 [0.57]	18.5 [0.73]	14 [0.55]
	⅛ NPT							
100 [4"]	¼ NPT	59.5 [2.34]	93 [3.66]	101 [3.98]	100 [3.94]	17 [0.67]	30 [1.18]	22 [0.87]
	½ NPT							

Model 233.30, lower back mount



NS	Weight
63 [2 ½"]	approx. 0.28 kg [0.62 lbs]
100 [4"]	approx. 1.08 kg [2.38 lbs]

Process connection with thread per EN 837-1

NS	G	Dimensions in mm [in]								
		b1	b2	D1	D2	f	i	y	k	SW
63 [2 ½"]	G ¼ B	42 [1.65]	68 [2.68]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
	G ⅝ B									
	M12 x 1.5									
100 [4"]	G ¼ B	59.5 [2.34]	100 [3.94]	101 [3.98]	100 [3.94]	30 [1.18]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	G ½ B									
	M12 x 1.5									
	M20 x 1.5									

Process connection with thread per ISO 7

NS	G	Dimensions in mm [in]								
		b1	b2	D1	D2	f	i	y	k	SW
63 [2 ½"]	R ¼	42 [1.65]	68 [2.68]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
100 [4"]	R ¼	59.5 [2.34]	100 [3.94]	101 [3.98]	100 [3.94]	30 [1.18]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	R ½									

Process connection with thread per ANSI/B1.20.1

NS	G	Dimensions in mm [in]								
		b1	b2	D1	D2	f	i	y	k	SW
63 [2 ½"]	¼ NPT	42 [1.65]	68 [2.68]	63 [2.48]	62 [2.44]	18.5 [0.73]	6 [0.24]	18 [0.71]	15 [0.59]	14 [0.55]
	⅝ NPT									
100 [4"]	¼ NPT	59.5 [2.34]	100 [3.94]	101 [3.98]	100 [3.94]	30 [1.18]	6 [0.24]	24 [0.94]	15 [0.59]	22 [0.87]
	½ NPT									

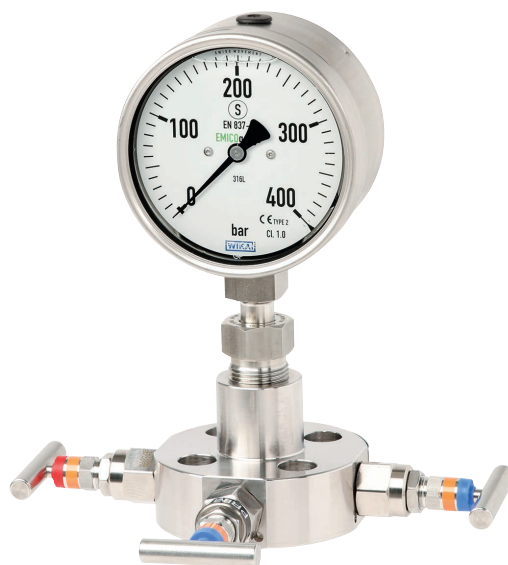
EMICOGauge

Instrument hook-up with instrumentation valves

The EMICOGauge instrument hook-up, consisting of pressure gauge and instrumentation valve, minimises the number of leakage points and thus reduces the risk of media escaping into the environment. In order to guarantee the system's leak tightness, an additional leak test is carried out in advance, for each individual component.

During mounting, the 360° swivel adapter connection of the EMICOGauge enables quick alignment of the pressure gauge with simultaneous pressure sealing. With this design, maintenance and dismounting of the pressure gauge and valve are also easy. WIKA can guarantee the leak tightness of the assembly for up to 20 mounting and dismounting operations.

The possible combinations of pressure gauges and the attachable valve models IV1x, IV2x and IVM are very large. Since special pressure connections are often required for specific applications, a large number of variants have been defined for the EMICOGauge in order to avoid adapters, which would otherwise be needed, with their 2 additional sealing points.



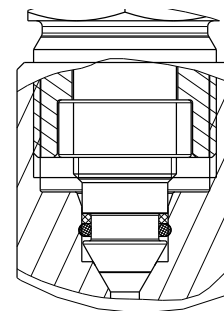
EMICOGauge consisting of model 232.30, NS 100 [4"] and mounted instrumentation valve

Advantages

- Significantly reduced risk of fugitive emissions, since the version for "fugitive emissions" complies with TA-Luft (VDI 2440)
- Fully tested and ready-to-install solution of an instrument-valve assembly
- Reduction of leakage paths in pressurised systems
- 360° swivel connection (swivel adapter) enables easy replacement and positioning of pressure gauges
- For various applications in chemical and petrochemical plants such as gas processing and production

Special pressure sealing

The redundant sealing, with metal/metal seat and O-ring plus backup sealing ring, ensures the required leak tightness of the measuring assembly in addition to a long service life.



Specifications

Basic information for pressure gauges

Nominal size (NS)	Ø 100 mm [4"]
Scale range	Between 0 ... 0.6 bar and 0 ... 420 bar As well as corresponding measuring spans for other units and +/- scale ranges
Connection location	Lower mount (radial)

Assembly

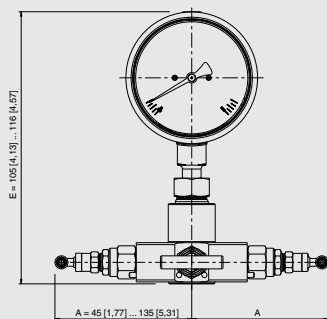
Mounting type	EMICOGauge connection: 360° swivel connection (swivel adapter) with special pressure sealing Spare part: 5 x sealing set consisting of O-ring and backup sealing ring; article no. 14525042
Instrumentation valve	■ For instrument version of IVM → See data sheet AC 09.17 ■ Model IV10, IV11 or IV20 → See data sheets AC 09.22 and AC 09.19

Process connection	
Standard	
Model IVM	■ In line with ASME B16.5, RF or RJ ■ In line with EN 1092-1, form B1 or B2
Model IV10, IV11 or IV20	■ ANSI/B1.20.1 ■ EN 837-1
Size	
In line with ASME B16.5, RF or RJ	Flange ½" ... 2" / class 150 ... class 2500
In line with EN 1092-1, form B1 or B2	Flange DN 15 ... DN 25 / PN 16 ... PN 100
ANSI/B1.20.1	½ NPT, male thread or ½ NPT, female thread
EN 837-1	G ½ B male
Material (wetted)	
Process connection	Stainless steel 1.4404 (316L)
Sealing	O-ring: FKM; backup sealing ring: PEEK

Operating conditions	
Medium temperature	
With unfilled pressure gauge	-20 ... +150 °C [-4 ... +302 °F]
With filled pressure gauge	-20 ... +100 °C [-4 ... +212 °F]
Ambient temperature	-20 ... +60 °C [-4 ... +140 °F]
Leak tightness of the overall system	Fulfills the fugitive emission requirements per TA Luft (VDI 2440), helium tested, leakage rate: $< 1 \cdot 10^{-4}$ mbar l/s

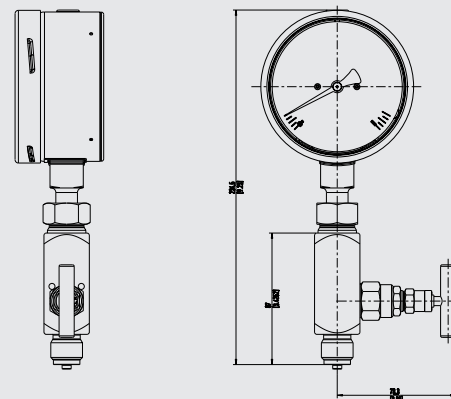
Examples of EMICOGauge, model 232.30, NS 100 [4"] and mounted instrumentation valve

With valve model IVM



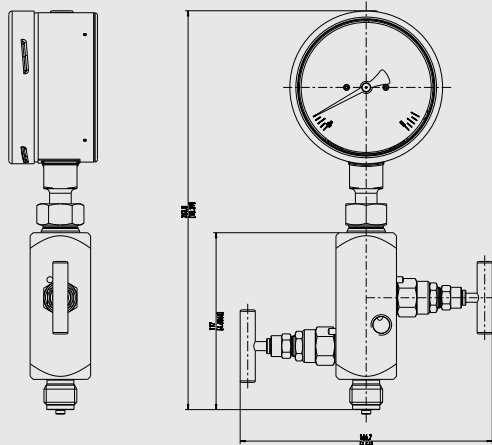
14521733.01

With valve model IV10



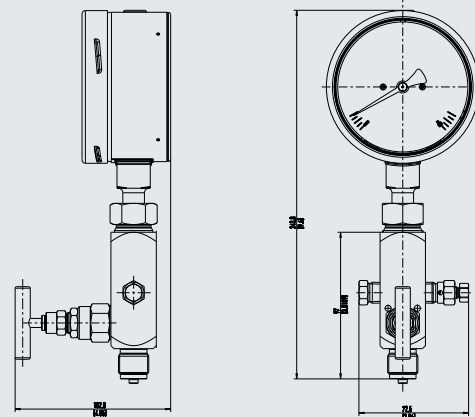
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With valve model IV20



14521735.01

With valve model IV11



14522516.01

Accessories and spare parts for models 232.30 and 232.30

Model		Description
	910.17	Sealings → see data sheet AC 09.08
	910.15	Syphons → See data sheet AC 09.06
	910.13	Overpressure protector → See data sheet AC 09.04
	IV10, IV11	Needle valve and multiport valve → See data sheet AC 09.22
	IV20, IV21	Block-and-bleed valve → See data sheet AC 09.19
	IVM	Monoflange, process and instrument version → See data sheet AC 09.17
	BV	Ball valve, process and instrument version → See data sheet AC 09.28
	IBF2, IBF3	Monoblock with flange connection → See data sheet AC 09.25

Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

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The specifications given in this document represent the state of engineering at the time of publishing.
We reserve the right to make modifications to the specifications and materials.



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Diaphragm seal with flange connection

With flush diaphragm

Model 990.27

WIKA data sheet DS 99.27



for further approvals
see page 5

Applications

- Aggressive, highly viscous, crystallising or hot media
- Process industry
- Machine building and automation

Special features

- Flange with flush welded diaphragm
- Common standards and nominal widths available
- Wide variety of different materials and material combinations



Diaphragm seal with flange connection, model 990.27

Description

Diaphragm seals are used for the protection of pressure measuring instruments in applications with difficult media. In diaphragm seal systems, the diaphragm of the diaphragm seal effects the separation of the instrument and the medium. The pressure is transmitted to the measuring instrument via the system fill fluid which is inside the diaphragm seal system.

For the implementation of demanding customer applications, there are a wide variety of designs, materials and system fill fluids available.

For further technical information on diaphragm seals and diaphragm seal systems see IN 00.06 "Application, operating principle, designs".

The model 990.27 diaphragm seal is available in a wide variety of dimensions following the usual standards for this market.

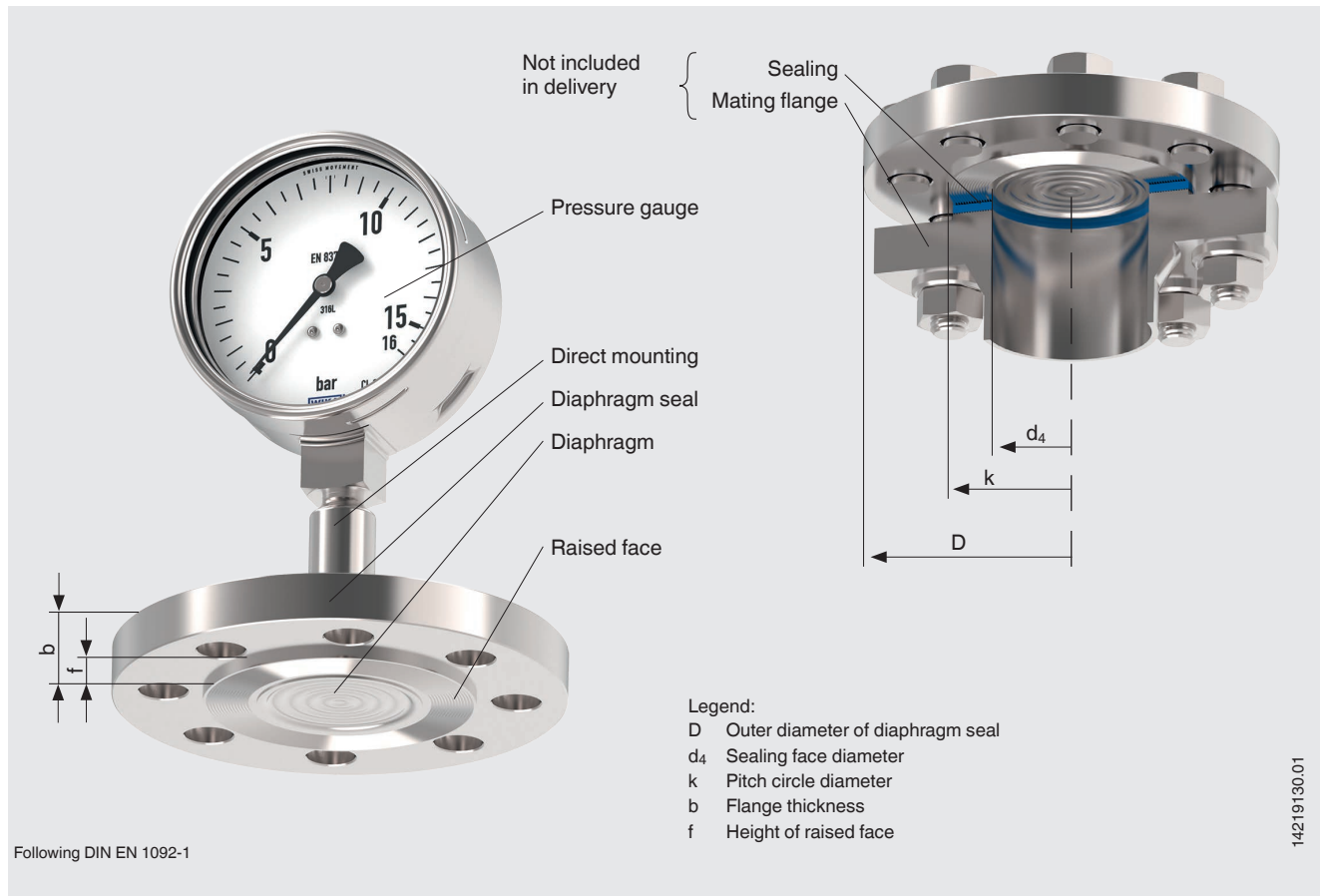
Mounting of the diaphragm seal to the measuring instrument may be made via a direct connection, for high temperatures via a cooling element or via a flexible capillary.

For the material selection WIKA offers a variety of solutions, in which the upper body of the diaphragm seal and the wetted parts can be made of identical or different materials. The diaphragm can, as an alternative, be coated.

Specifications

Model 990.27	Standard	Option
Nominal pressure and materials	See tables from page 4	
Level of cleanliness of wetted parts	Oil and grease free per ASTM G93-03 level F WIKA standard (< 1,000 mg/m ²)	- Oil and grease free per ASTM G93-03 level D and ISO 15001 (< 220 mg/m²) - Oil and grease free per ASTM G93-03 level C and ISO 15001 (< 66 mg/m²)
Origin of wetted parts	International	EU, CH, USA
Connection to the measuring instrument	Axial adapter	Axial adapter with G ½, G ¾, ½ NPT or ¼ NPT (female)
Type of mounting	Direct mounting	- Capillary - Cooling element
Flushing ring, model 910.27	-	Stainless steel 316L, for connection DN 40 ... 125 per EN or DN 1 ½" ... 5" per ASME (see data sheet AC 91.05)
Design per NACE	-	- MR 0175 - MR 0103
Vacuum service (see IN 00.25)	Basic service	- Premium service - Advanced service
Instrument mounting bracket (only for capillary option)	-	- Form H per DIN 16281, 100 mm, aluminium, black - Form H per DIN 16281, 100 mm, stainless steel - Bracket for pipe mounting, for pipe Ø 20 ... 80 mm, steel (see data sheet AC 09.07)

Example: Diaphragm seal model 990.27 with mounted pressure gauge



Process connection, flange

Standard	Flange size	Sealing face	
		Standard	Option
Following DIN EN 1092-1	DN 25	Form B1	■ Form A ■ Form B2 ■ Form C (tongue) ■ Form D (groove) ■ Form E (spigot) ■ Form F (recess)
	DN 40		
	DN 50		
	DN 65		
	DN 80		
	DN 100		
	DN 125		
Following ASME B16.5	1"	RF 125 ... 250 AA	■ RFSF ■ Flat face ■ Small tongue ■ Small male face ■ Small groove ■ Small female face ■ Large tongue ■ Large male face ■ Large groove ■ Large female face ■ RJF groove
	1 ½"		
	2"		
	2 ½"		
	3"		
	4"		
	5"		
Following GOST 33259	DN 25	Type B	■ Type A (flat face) ■ Type C (tongue) ■ Type D (groove) ■ Type E (spigot, male face) ■ Type F (recess, female face)
	DN 40		
	DN 50		
	DN 65		
	DN 80		
	DN 100		
	DN 125		
Following API 6A	1 1/8"	Ring-joint groove	-
	1 1/16"		
	1 13/16"		
	2 1/16"		
Following JIS B2220	DN 25A	RF	-
	DN 40A		
	DN 50A		
	DN 80A		
	DN 100A		

Other flanges on request

Material combinations

Upper body of diaphragm seal	Wetted parts	Maximum permissible process temperature ¹⁾ in °C [°F]
Stainless steel 1.4404 (316L)	Stainless steel 1.4404 / 1.4435 (316L), standard version	400 [752]
	Stainless steel 1.4539 (904L)	
	Stainless steel 1.4541 (321)	
	Stainless steel 1.4571 (316Ti)	
	ECTFE coating	150 [302]
	PFA (perfluoroalkoxy) coating, FDA	260 [500]
	PFA (perfluoroalkoxy) coating, antistatic	
	Gold plating	400 [752]
	Wikaramic® coating	
	Hastelloy C22 (2.4602)	260 [500]
	Hastelloy C276 (2.4819)	400 [752]
	Inconel 600 (2.4816)	
	Inconel 625 (2.4856)	
	Incoloy 825 (2.4858)	
	Monel 400 (2.4360)	
	Nickel 200 (2.4060, 2.4066)	260 [500]
	Titanium grade 2 (3.7035)	150 [302]
	Titanium grade 11 (3.7225)	
	Tantalum	300 [572]
Stainless steel 1.4435 (316L)	Stainless steel 1.4435 (316L)	400 [752]
Stainless steel 1.4539 (904L)	Stainless steel 1.4539 (904L)	
Stainless steel 1.4541 (321)	Stainless steel 1.4541 (321)	
Stainless steel 1.4571 (316Ti)	Stainless steel 1.4571 (316Ti)	
Duplex 2205 (1.4462)	Duplex 2205 (1.4462)	300 [572]
Superduplex 2507 (1.4410)	Superduplex 2507 (1.4410)	
Hastelloy C22 (2.4602)	Hastelloy C22 (2.4602)	400 [752]
Hastelloy C276 (2.4819)	Hastelloy C276 (2.4819)	
Inconel 600 (2.4816)	Inconel 600 (2.4816)	
Inconel 625 (2.4856)	Inconel 625 (2.4856)	
Incoloy 825 (2.4558)	Incoloy 825 (2.4858)	
Monel 400 (2.4360)	Monel 400 (2.4360)	
Nickel 200 (2.4060, 2.4066)	Nickel 200 (2.4060, 2.4066)	
Titanium grade 2 (3.7035)	Titanium grade 2 (3.7035)	
Titanium grade 7 (3.7235)	Titanium grade 11 (3.7225)	

1) The maximum permissible process temperature of the diaphragm seal system is limited by the joining method, by the system fill fluid and by the measuring instrument.

Further material combinations for special process temperatures on request

Approvals

Logo	Description	Country
	EAC (option) Pressure equipment directive	Eurasian Economic Community
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada
-	MTSCHS (option) Permission for commissioning	Kazakhstan

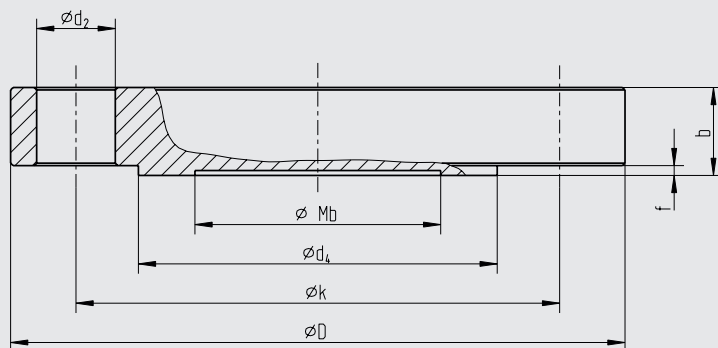
Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy for diaphragm seal systems)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metallic parts, indication accuracy for diaphragm seal systems)

Approvals and certificates, see website

Dimensions in mm [in]

Flange connection following DIN EN 1092-1, form B



Legend:

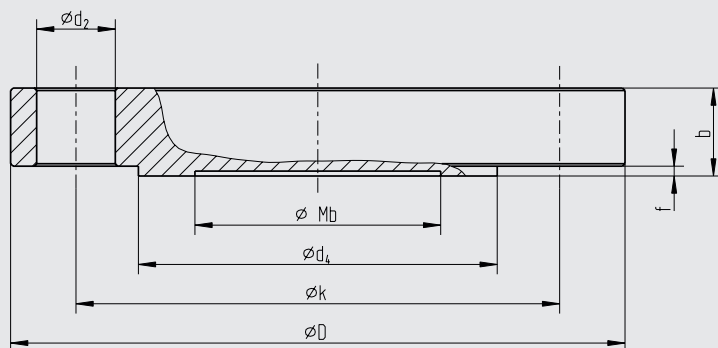
- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- b Flange thickness
- d₂ Bore diameter
- d₄ Sealing face diameter
- f Height of raised face
- k Pitch circle diameter
- x Number of bores

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DN	PN in bar	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d ₂	k	f	d ₄		
25	10/40	32 [1.26]	115 [4.528]	18 [0.709]	14 [0.551]	85 [3.346]	2 [0.079]	68 [2.677]	4	1.5 [3.3]
	63/100	25 [0.984]	140 [0.984]	24 [0.945]	18 [0.709]	100 [3.937]				2.5 [5.5]
40	10/40	45 [1.772]	150 [5.905]	18 [0.709]	18 [0.709]	110 [4.331]	2 [0.079]	88 [3.465]	4	2.6 [5.7]
	63/100		170 [6.693]	26 [1.024]	22 [0.866]	125 [4.921]				4.0 [8.8]
	160		170 [6.693]	28 [1.102]	22 [0.866]	125 [4.921]				4.3 [9.5]
	250		185 [2.283]	34 [1.339]	26 [1.024]	135 [5.315]				6.3 [13.9]
50	10/40	59 [2.323]	165 [6.496]	20 [0.787]	18 [0.709]	125 [4.921]	2 [0.079]	102 [4.016]	4	3.3 [7.3]
	63		180 [7.087]	26 [1.024]	22 [0.866]	135 [5.315]				5.1 [11.2]
	100		195 [7.677]	28 [1.102]	26 [1.024]	145 [5.709]				6.5 [14.3]
	160		195 [7.677]	30 [1.181]	26 [1.024]	145 [5.709]				7.0 [15.4]
	250		200 [7.874]	38 [1.496]	26 [1.024]	150 [5.906]				9.3 [20.5]
80	10/16	89 [3.504]	200 [7.874]	20 [0.787]	18 [0.709]	160 [6.299]	2 [0.079]	138 [5.433]	8	4.9 [10.8]
	25/40		200 [7.874]	24 [0.945]	18 [0.709]	160 [6.299]				5.8 [12.8]
	63		215 [8.465]	28 [1.102]	22 [0.866]	170 [6.693]				7.9 [17.4]
	100		230 [9.055]	32 [1.26]	26 [1.024]	180 [7.087]				10.4 [22.9]
	160		230 [9.055]	36 [1.487]	26 [1.024]	180 [7.087]				11.7 [25.8]
	250		255 [10.039]	46 [1.811]	30 [1.181]	200 [7.874]				18.4 [40.6]
100	10/16	89 [3.504]	220 [8.661]	20 [0.787]	18 [0.709]	180 [7.087]	2 [0.079]	158 [6.22]	8	5.9 [13]
	25/40		235 [9.252]	24 [0.945]	22 [0.866]	190 [7.480]				8.1 [17.9]
	63		250 [9.842]	30 [1.181]	26 [1.024]	200 [7.874]				11.5 [25.3]
	100		265 [10.433]	36 [1.487]	30 [1.181]	210 [8.268]				15.5 [34.2]
	160		265 [10.433]	40 [1.575]	30 [1.181]	210 [8.268]				17.3 [38.1]
	250		300 [11.811]	54 [2.126]	33 [1.299]	235 [9.252]				29.9 [65.9]
125	10/16	124 [4.882]	250 [9.842]	22 [0.866]	18 [0.709]	210 [8.268]	2 [0.079]	188 [7.402]	8	8.4 [18.5]
	25/40		270 [10.63]	26 [1.024]	26 [1.024]	220 [8.661]				11.6 [25.6]
	63		295 [11.614]	34 [1.339]	30 [1.181]	240 [9.449]				16.5 [36.4]
	100		315 [12.412]	40 [1.575]	33 [1.299]	250 [9.842]				24.4 [53.8]
	160		315 [12.412]	44 [1.732]	33 [1.299]	250 [9.842]				26.9 [59.3]
	250		340 [13.386]	60 [2.342]	33 [1.299]	275 [10.827]				42.7 [94.1]

Further dimensions and higher nominal pressures on request

Dimensions in mm [in] Flange connection per ASME B 16.5, RF



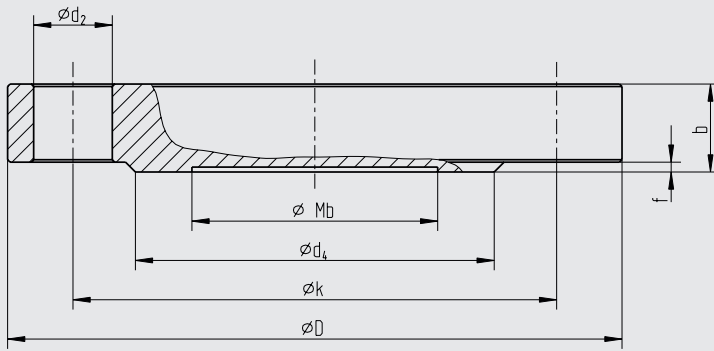
Legend:
Mb Effective diameter of diaphragm
D Outer diameter of diaphragm seal
b Flange thickness
d₂ Bore diameter
d₄ Sealing face diameter
f Height of raised face
k Pitch circle diameter
x Number of bores

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DN	Class	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d ₂	k	f	d ₄		
1"	150	32	110 [4.331]	14.7 [0.579]	16 [0.63]	79.4 [3.126]	2	51	4	1.4 [3.1]
	300	[1.26]	125 [4.921]	17.9 [0.705]	19 [0.748]	88.9 [3.5]	[0.079]	[2.008]		1.7 [3.7]
1 ½"	150	45	125 [4.921]	17.9 [0.705]	16 [0.63]	98.4 [3.874]	2	73	4	1.6 [3.5]
	300	[1.772]	155 [6.102]	21.1 [0.831]	22 [0.866]	114.3 [4.5]	[0.079]	[2.874]		2.5 [5.5]
	600		155 [6.102]	29.3 [1.154]	22 [0.866]	114.3 [4.5]	7			3.3 [7.2]
	1,500		180 [7.087]	38.8 [1.528]	29 [1.142]	123.8 [4.874]	[0.276]			5.9 [13]
	2,500		205 [8.071]	51.5 [2.078]	32 [1.26]	146 [5.748]				10.4 [22.9]
2"	150	59	150 [5.905]	19.5 [0.768]	19 [0.748]	120.7 [4.752]	2	92	4	2.7 [6]
	300	[2.323]	165 [6.496]	22.7 [0.894]	19 [0.748]	127 [5]	[0.079]	[3.622]	8	3.7 [8.1]
	600		165 [6.496]	32.4 [1.276]	19 [0.748]	127 [5]	7			5.7 [12.6]
	1,500		215 [8.465]	45.1 [1.776]	26 [1.024]	165.1 [6.5]	[0.276]			13.2 [29]
	2,500		235 [9.252]	57.9 [2.28]	29 [1.142]	171.4 [6.748]				19.8 [43.7]
3"	150	89	190 [7.482]	24.3 [0.957]	19 [0.748]	152.4 [6]	2	127	4	5.3 [11.7]
	300	[3.504]	210 [8.268]	29 [1.142]	22 [0.866]	168.3 [6.626]	[0.079]	[5]	8	7.8 [17.2]
	600		210 [8.268]	38.8 [1.528]	22 [0.866]	168.3 [6.626]	7			11 [24.3]
	900		240 [9.449]	45.1 [1.776]	26 [1.024]	190.5 [7.7]	[0.276]			16.7 [36.8]
	1,500		265 [10.433]	54.7 [1.799]	32 [1.26]	203.2 [8]				24.5 [54]
	2,500		305 [12.007]	73.7 [2.902]	35 [1.378]	228.6 [5.063]				42.7 [94.1]
4"	150	89	230 [9.055]	24.3 [0.957]	19 [0.748]	190.5 [7.5]	2	157.2	8	7.7 [17]
	300	[3.504]	255 [10.039]	32.2 [1.268]	22 [0.866]	200 [7.874]	[0.079]	[6.189]		12.7 [28]
	400		255 [10.039]	42 [1.654]	26 [1.024]	200 [7.874]	7			17.4 [38.4]
	600		275 [10.826]	45.1 [1.776]	26 [1.024]	215.9 [8.5]	[0.276]			21.5 [47.4]
	900		290 [11.417]	51.5 [2.028]	32 [1.26]	235 [9.252]				27.7 [61.1]
	1,500		310 [12.205]	61 [2.402]	35 [1.378]	241.3 [9.5]				37 [81.6]
	2,500		355 [13.976]	83.2 [3.276]	42 [1.654]	273 [10.748]				65.7 [144.8]
5"	150	124	255 [10.039]	24.3 [0.957]	22 [0.866]	215.9 [8.5]	2	185.7	8	9.2 [20.3]
	300	[4.882]	280 [11.024]	35.4 [1.394]		235 [9.25]	[0.079]	[7.311]		16.3 [35.9]
	400			45.1 [2.13]	26 [1.024]		7			19.3 [42.5]
	600		330 [13]	51.5 [2.028]	29 [1.142]	266.7 [10.5]	[0.276]			30.5 [67.2]
	900		350 [13.78]	57.8 [2.278]	35 [1.378]	279.4 [11]				38 [83.8]
	1,500		375 [14.764]	80.1 [3.154]	42 [1.654]	292.1 [11.5]				60.1 [132.5]
	2,500		420 [16.535]	99.1 [3.902]	48 [1.889]	323.8 [12.75]				93.6 [206.4]

Further dimensions and higher nominal pressures on request

Flange connection per GOST 33259, type B



Legend:

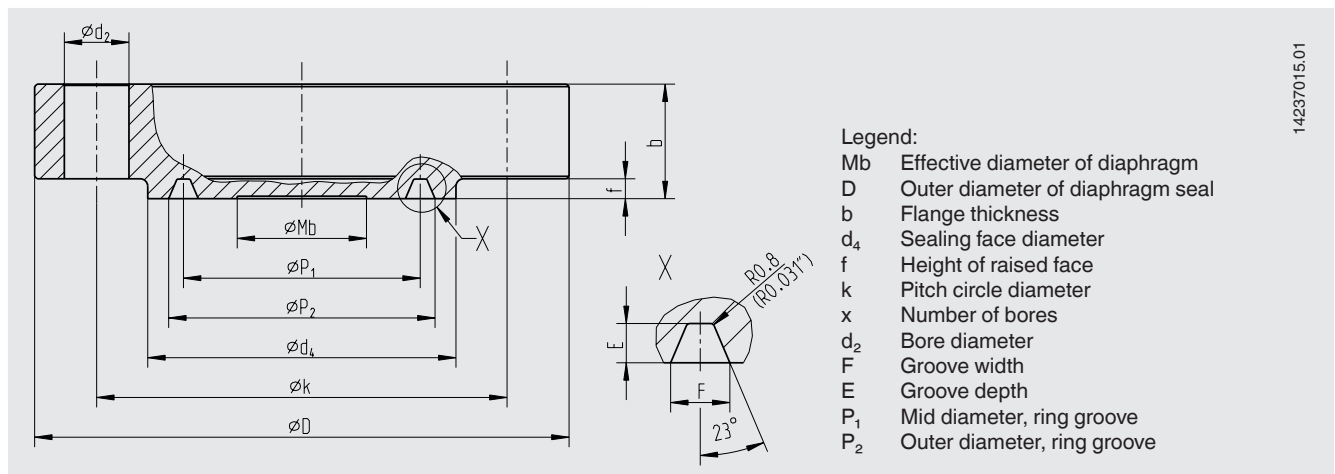
- Mb Effective diameter of diaphragm
- D Outer diameter of diaphragm seal
- b Flange thickness
- d₂ Bore diameter
- d₄ Sealing face diameter
- f Height of raised face
- k Pitch circle diameter
- x Number of bores

14237014.01

DN	PN in bar	Dimensions in mm [in]							x	Weight in kg [lbs]			
		Mb	D	b	d ₂	k	f	d ₄					
50	10/16	59 [2.323]	160 [6.3]	16 [0.63]	18 [0.709]	125 [4.921]	3 [0.118]	102 [4.016]	4	2.4 [5.3]			
	25/40			20 [0.787]						3 [6.6]			
	63			26 [1.024]						4.5 [9.9]			
	100			28 [1.102]						5.6 [12.3]			
	160			30 [1.181]						6.4 [14.1]			
	200			210 [8.268]		40 [1.575]			160 [6.299]	8	9.4 [20.7]		
80	10	89 [3.504]	195 [7.677]	18 [0.709]	18 [0.709]	160 [6.299]	3 [0.118]	133 [5.236]	4	4 [8.8]			
	16			20 [0.787]						4.5 [9.9]			
	25			22 [0.866]					8	4.8 [10.6]			
	40			24 [0.945]						5.2 [11.5]			
	63			210 [7.677]		30 [1.181]				22 [0.866]	170 [6.693]	7.4 [16.3]	
	100			230 [9.055]		34 [1.339]			26 [1.024]	180 [7.087]	9.8 [21.6]		
	160			36 [1.417]		10.4 [22.9]							
	200			290 [11.417]		54 [2.126]			33 [1.299]	230 [9.055]	24.7 [54.5]		
	100			10/16		89 [3.504]			215 [8.465]	20 [0.787]	18 [0.709]	180 [7.087]	3 [0.118]
25		230 [9.055]	24 [0.945]	22 [0.866]	190 [7.48]		7.1 [15.7]						
40		26 [1.024]	7.8 [17.2]										
63		250 [9.842]	32 [1.26]	26 [1.024]	200 [7.874]		11.1 [24.5]						
100		265 [10.433]	38 [1.496]	30 [1.181]	210 [8.268]		14.5 [32]						
160		40 [1.575]	15.3 [33.7]										
200		360 [14.173]	66 [2.598]	39 [1.535]	292 [11.496]		47.2 [104.1]						
125		10/16	89 [3.504]	245 [9.646]	22 [0.866]		18 [0.709]	210 [8.268]		3 [0.118]		184 [7.244]	
	25	270 [10.63]			26 [1.024]	220 [8.661]			10.6 [23.4]				
	40	28 [1.102]			11.4 [25.1]								
	63	295 [11.614]			36 [1.417]	30 [1.181]		240 [9.449]	17.4 [38.4]				
	100	310 [12.205]			42 [1.654]	33 [1.299]		250 [9.842]	22.3 [49.2]				
	160	310 [12.205]			44 [1.732]	23.4 [51.6]							
	200	385 [15.157]			76 [2.992]	39 [1.535]		318 [12.52]	63.2 [139.3]				

Further dimensions and higher nominal pressures on request

Flange connection per API 6A, ring-joint groove

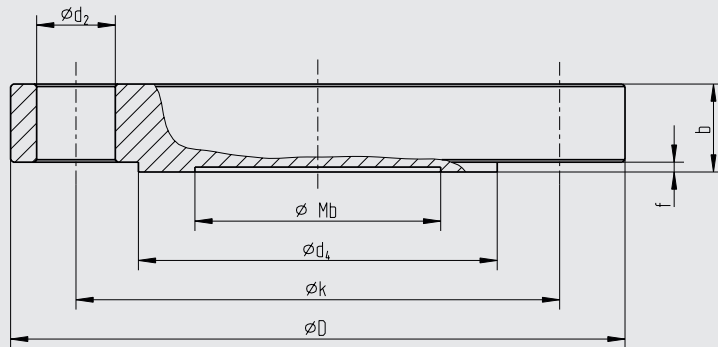


14237015.01

DN	PN in psi	Dimensions in mm [in]						x	Groove dimensions in mm [in]					Weight in kg [lbs]
		Mb	D	d4	f	b	k		d2	P1	P2	E	F	
1 13/16"	10,000	40 [1.575]	185 [7.283]	105 [4.134]	4 [0.157]	42.1 [1.657]	146.1 [5.752]	8	23 [0.906]	-	77.77 [3.062]	5.56 [21.89]	11.84 [0.466]	7.7 [17]
	15,000		210 [8.268]	106 [4.173]		45.3 [1.783]	160.3 [6.311]		26 [1.024]					10.5 [23.1]
	20,000		255 [10.039]	117 [4.606]		63.5 [2.5]	203.2 [8]		29 [1.142]					22.3 [49.2]
2 1/16"	2,000	52 [2.047]	165 [6.496]	108 [4.252]	8 [0.315]	33.4 [1.315]	127 [5]		20 [0.787]	82.55 [3.25]	-	7.9 [0.311]	11.91 [0.469]	4.6 [10.1]
	3,000/ 5,000		215 [8.465]	124 [4.882]		46.1 [1.815]	165.1 [6.5]		26 [1.024]	95.25 [3.75]				10.7 [23.6]
	10,000		200 [7.874]	111 [4.370]	4 [0.157]	44.1 [1.736]	158.8 [6.252]		23 [0.906]	-	86.23 [3.395]	5.95 [0.234]	12.65 [0.498]	9.5 [20.9]
	15,000		220 [8.661]	114 [4.488]		50.8 [2]	174.6 [6.874]		26 [1.024]					13.2 [29.1]
	20,000		285 [11.22]	132 [5.197]		71.5 [2.815]	230.2 [9.063]		32 [1.26]					31.6 [69.7]
2 9/16"	2,000	59 [2.323]	190 [7.48]	127 [5]	8 [0.315]	36.6 [1.441]	149.2 [5.874]		23 [0.906]	101.6 [4]	-	7.9 [3.11]	11.91 [0.469]	6.7 [14.8]
	3,000/ 5,000		245 [9.656]	137 [5.394]		49.3 [1.941]	190.5 [7.5]		29 [1.142]	107.95 [2.25]				15 [33.1]
	10,000		230 [9.055]	132 [5.197]	4 [0.157]	51.2 [2.016]	184.2 [7.252]		26 [1.024]	-	102.77 [4.046]	6.75 [0.266]	14.07 [0.579]	14.7 [32.4]
	15,000		255 [10.039]	133 [5.236]		57.2 [2.055]	200 [7.874]		29 [1.142]					20.1 [44.3]
	20,000		325 [12.795]	151 [5.945]		79.4 [3.126]	261.9 [10.311]		35 [1.378]					46.3 [102]
3 1/8"	2,000	89 [3.504]	210 [8.268]	146 [5.748]	7.9 [0.311]	39.7 [1.563]	168.3 [6.626]		23 [0.906]	123.83 [4.875]	-	7.9 [0.311]	11.91 [0.469]	9.2 [20.3]
	3,000		240 [9.449]	156 [6.142]	8 [0.315]	46.1 [1.815]	190.5 [7.5]		26 [1.024]					13.9 [30.6]
	5,000		265 [10.433]	168 [6.614]	7.9 [0.311]	55.6 [2.189]	203.2 [8]		32 [1.26]	136.53 [5.375]				20.2 [44.5]

Further dimensions and higher nominal pressures on request

Flange connection per JIS B 2220, RF



Legend:

Mb	Effective diameter of diaphragm
D	Outer diameter of diaphragm seal
b	Flange thickness
d ₂	Bore diameter
d ₄	Sealing face diameter
f	Height of raised face
k	Pitch circle diameter
x	Number of bores

1387979.04

DN	PN	Dimensions in mm [in]							x	Weight in kg [lbs]
		Mb	D	b	d ₂	k	f	d ₄		
25A	5K	32 [1.26]	95 [3.74]	10 [0.394]	12 [0.472]	75 [2.953]	1 [0.039]	59 [2.323]	4	0.7 [1.5]
	10K		125 [4.921]	14 [0.551]	19 [0.748]	90 [3.543]		67 [2.638]		1.4 [3.1]
	16K									
	20K			16 [0.63]						1.6 [3.5]
	30K	25 [0.984]	130 [5.118]	20 [0.787]		95 [3.740]		70 [2.756]		2.1 [4.6]
	40K			22 [0.866]						2.3 [5.1]
	63K		140 [5.512]	27 [1.063]	23 [0.906]	100 [3.967]				3.1 [6.9]
50A	5K	59 [2.323]	130 [5.118]	14 [0.551]	15 [0.591]	105 [4.134]	2 [0.079]	85 [3.346]	8	1.5 [3.3]
	10K		155 [6.102]	16 [0.63]	19 [0.748]	120 [4.724]		96 [3.78]		2.3 [5.1]
	16K									2.2 [4.9]
	20K			18 [0.709]						2.4 [5.3]
	30K		165 [6.496]	22 [0.866]		130 [5.118]		105 [4.134]		3.4 [7.5]
	40K			26 [1.024]						4.0 [8.8]
	63K		185 [7.83]	34 [1.339]	23 [0.906]	145 [5.709]				6.4 [14.1]
80A	5K	89 [3.504]	180 [7.087]	14 [0.551]	19 [0.748]			121 [4.764]	8	2.7 [6]
	10K		185 [7.83]	18 [0.709]		150 [5.905]		126 [4.961]		3.5 [7.7]
	16K		200 [7.874]	20 [0.787]	23 [0.906]	160 [6.299]		132 [5.197]		4.5 [9.9]
	20K			22 [0.866]						4.9 [10.8]
	30K		210 [8.268]	28 [1.102]		170 [6.693]		140 [5.512]		7 [15.4]
	40K			32 [1.26]						8 [17.6]
	63K		230 [9.055]	40 [1.575]	25 [0.984]	185 [7.83]				11.9 [26.2]
100A	5K		200 [7.874]	16 [0.63]	19 [0.748]	165 [6.496]		141 [5.551]		3.7 [8.2]
	10K		210 [8.268]	18 [0.709]		175 [6.89]		151 [5.945]		4.6 [10.1]
	16K		225 [8.858]	22 [0.866]	23 [0.906]	185 [7.83]		160 [6.299]		6.4 [14.1]
	20K			24 [0.945]						6.9 [15.2]
	30K		240 [9.449]	32 [1.26]	25 [0.984]	195 [7.677]				10.4 [22.9]
	40K		250 [9.852]	36 [1.417]		205 [8.071]		165 [6.496]		12.8 [28.2]
	63K		270 [10.63]	44 [1.732]	27 [1.063]	220 [8.661]				18.2 [40.1]

Further dimensions and higher nominal pressures on request

Ordering information

Diaphragm seal:

Diaphragm seal model / Process connection (standard, flange size, nominal pressure, sealing face) / Materials (upper body, sealing face, diaphragm) / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Connection to the measuring instrument / Certificates / Flushing ring

Diaphragm seal system:

Diaphragm seal model / Pressure measuring instrument model (per data sheet) / Mounting (direct mounting, cooling element, capillary) / Materials (upper body, sealing face, diaphragm) / Min. and max. process temperature / Min. and max. ambient temperature / Vacuum service / System fill fluid / Certificates / Height difference / Level of cleanliness of wetted parts / Origin of wetted parts / Design per NACE / Diaphragm seal for mounting to zone 0 / Instrument mounting bracket / Process connection (standard, flange size, nominal pressure, sealing face) / Flushing ring

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We reserve the right to make modifications to the specifications and materials.



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	KINGDOM OF SAUDI ARABIA Saline Water Conversion Corporation AL-KHARJ RESERVOIR STATION							PAGE 33 OF 34
	Subject: SPECIFICATION OF LEVEL GAUGE AND ITP							Spec. No. S01.S02&S03
Revision Index	First	Rev.	A	0	1			Document Number 49-QB20-H-316
	Issue	Date:	13/01/2022	31/03/2022	27/06/2022			
	6. INSPECTION AND TEST PLAN							
Final Engineering			Contractor				Subcontractor	
			AL-RASHID TRADING & CONTRACTING CO.					

INSPECTION AND TEST PLAN



Customer :		AL-Rashid Trading and Contracting Company				WIKA Ref. : SO001226	
Customer P.O No.:		16401/1648				Date : 21.01.2022	
Description :		Level Gauge				Page No.: 8 of 8	
Point No.	Activity	Quality Controlling Document / Spec	Acceptance Criteria	Verifying Docs / Record	<u>WIKA</u>	<u>RTCC</u>	<u>SWCC</u>
1	<u>Material Receipt Inspection</u> Upon receipt of raw materials- dimensions, material stamping & documentation confirmed; Review of MTC	PO, Project Specifications	WIKA Standard	MTC EN 10204, 3.1	R	R	R
2	Calibration Test Report		Calibration Procedure	Test Report	W	R	R
3	Pressure and stability test		1.5 times of Full Scale	Test Report	W	R	R
4	Visual and Dimensional Check		Dimensions as per Drawings	V& D Report	W	R	R
5	Check of Nameplate		As per Drawings	Drawings	W	R	R
6	Certificate of Compliance		PO	COC	R	R	R
7	Issue of Inspection Release Note		IRN	Packing List	H	H	R

H: Hold

R: Review (100%)

W: Witness-100%